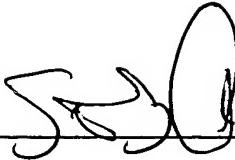


Signature/Date



10/6/03

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In the Claims

Amendments to the claims:

Claims 1 - 41 (canceled)

(ORIGINAL)

Claim 42. A top-metal fuse structure and an RDL/bump/bonding pad structure, comprising:

a structure having an overlying intermetal dielectric layer; the structure including a fuse region and an RDL/bump/bonding pad region;

5 a top-metal fuse structure over the intermetal dielectric layer within the fuse region; the top-metal fuse structure having:

a patterned lower first metal layer fuse portion over the intermetal dielectric layer; and

a patterned second metal layer fuse portion centered over the

10 lower first metal layer fuse portion; the patterned lower first metal layer fuse portion and the patterned second metal layer fuse portion each having equal widths;

and

an RDL/bump/bonding pad structure over the intermetal dielectric layer
15 within the RDL/bump/bonding region; the RDL/bump/bonding pad structure
having:

a patterned lower first metal layer non-fuse portion over the
intermetal dielectric layer, the patterned lower first metal
layer non-fuse portion having a first width;

20 a patterned second metal layer non-fuse portion centered over the
lower first metal layer non-fuse portion, the patterned second
metal layer non-fuse portion having a second lower width
equal to the first width of the patterned lower first metal layer
non-fuse portion and a second upper width less than the first
width of the patterned lower first metal layer non-fuse portion;

25 and

a patterned upper first metal layer non-fuse portion centered over
the patterned second metal layer non-fuse portion, the
patterned upper first metal layer non-fuse portion having a
third width less than the second lower width of the patterned
second metal layer non-fuse portion whereby a step profile is
30 formed at least as between the patterned upper first metal

layer non-fuse portion and the patterned second metal

layer lower width non-fuse portion.

Claim 43 (currently amended) The ~~method~~ structure of claim 42, wherein the structure is a structure is a substrate selected from the group consisting of a silicon substrate, a silicon-on-oxide substrate and a GaAs substrate.

Claim 44 (currently amended) The ~~method~~ structure of claim 42, wherein the intermetal dielectric layer is comprised of a material selected from the group consisting of: USG, PSG, BPSG, FSG and SiN; the second metal layer is comprised of a material selected from the group consisting of: TiN; Ti, TaN and Ta; and the upper and lower first metal layers are comprised of a material selected from the group consisting of: Al; an aluminum copper alloy; copper and a copper alloy.

Claim 45 (currently amended) The ~~method~~ structure of claim 42, wherein the intermetal dielectric layer is comprised of USG; the second metal layer is comprised of TiN; and the upper and lower first metal layers are comprised of Al.

Claim 46 (currently amended) The ~~method~~ structure of claim 42, wherein the intermetal dielectric layer has a thickness of from about 3000 to 15,000Å; the second metal layer has a thickness of from about 200 to 2000Å; the upper first metal layer

have a thickness of greater than about 3000Å; and the lower first metal layer has a thickness of from about 2000 to 10,000Å.

Claim 47 (currently amended) The ~~method~~ structure of claim 42, wherein the second metal layer has a thickness of about 1000Å; the upper first metal layer have a thickness of greater than about 8000Å; and the lower first metal layer has a thickness of about 5000Å.

Claim 48 (currently amended) The ~~method~~ structure of claim 42, wherein the top-metal fuse structure further includes a third metal layer fuse portion interposed between the patterned lower first metal layer fuse portion and the patterned second metal layer fuse portion.

Claim 49 (currently amended) The ~~method~~ structure of claim 42, wherein the top-metal fuse structure further includes a third metal layer fuse portion interposed between the patterned lower first metal layer fuse portion and the patterned second metal layer fuse portion; the third metal layer fuse portion being comprised of a material selected from the group consisting of Ti, TiN, Ta and TaN.

Claim 50 (currently amended) The ~~method~~ structure of claim 42, wherein the top-metal fuse structure further includes a third metal layer fuse portion interposed

between the patterned lower first metal layer fuse portion and the patterned second metal layer fuse portion; the third metal layer fuse portion being comprised of Ti.

Claim 51 (currently amended) The ~~method~~ structure of claim 42, wherein the top-metal fuse structure further includes a third metal layer fuse portion interposed between the patterned lower first metal layer fuse portion and the patterned second metal layer fuse portion; the third metal layer fuse portion has a thickness of from about 30 to 300Å.

Claim 52 (currently amended) The ~~method~~ structure of claim 42, wherein the top-metal fuse structure further includes a third metal layer fuse portion interposed between the patterned lower first metal layer fuse portion and the patterned second metal layer fuse portion; the third metal layer fuse portion has a thickness of about 100Å.

Claim 53 (currently amended) The ~~method~~ structure of claim 42, wherein the RDL/bump/bonding pad structure is an RDL.

Claim 54 (currently amended) The ~~method~~ structure of claim 42, wherein the RDL/bump/bonding pad structure is a bump.

Claim 55 (currently amended) The ~~method~~ structure of claim 42, wherein the RDL/bump/bonding pad structure is a bonding pad.

Claim 56 (currently amended) The ~~method~~ structure of claim 42, wherein the structure is a silicon substrate.

Claim 57 (currently amended) The ~~method~~ structure of claim 42, wherein the structure further includes a barrier layer overlying the intermetal dielectric layer.

Claim 58 (currently amended) The ~~method~~ structure of claim 42, wherein the structure further includes a barrier layer overlying the intermetal dielectric layer; the barrier layer having a thickness of from about 100 to 800Å.

Claim 59 (currently amended) The ~~method~~ structure of claim 42, wherein the structure further includes a barrier layer overlying the intermetal dielectric layer; the barrier layer being comprised of Ti/TiN or Ta/TaN.

(ORIGINAL)

Claim 60. A top-metal fuse structure and an RDL/bump/bonding pad structure, comprising:

a substrate having an overlying intermetal dielectric layer; the substrate including a fuse region and an RDL/bump/bonding pad region; the substrate

- 5 being comprised of a substrate selected from the group consisting of: a silicon substrate, a silicon-on-oxide substrate and a GaAs substrate;
- a top-metal fuse structure over the intermetal dielectric layer within the fuse region; the top-metal fuse structure having:
- 10 a patterned lower first metal layer fuse portion over the intermetal dielectric layer; and
- a patterned second metal layer fuse portion centered over the lower first metal layer fuse portion; the patterned lower first metal layer fuse portion and the patterned second metal layer fuse portion each having equal widths;
- 15 and
- an RDL/bump/bonding pad structure over the intermetal dielectric layer within the RDL/bump/bonding region; the RDL/bump/bonding pad structure having:
- 20 a patterned lower first metal layer non-fuse portion over the intermetal dielectric layer, the patterned lower first metal layer non-fuse portion having a first width;
- a patterned second metal layer non-fuse portion centered over the lower first metal layer non-fuse portion, the patterned second metal layer non-fuse portion having:

25 a second lower width equal to the first width of the
 patterned lower first metal layer non-fuse
 portion; and
 a second upper width less than the first width of the
 patterned lower first metal layer non-fuse
 portion; and
30 a patterned upper first metal layer non-fuse portion centered over
 the patterned second metal layer non-fuse portion, the
 patterned upper first metal layer non-fuse portion having a
 third width less than the second lower width of the patterned
 second metal layer non-fuse portion whereby a step profile is
 formed at least as between the patterned upper first metal
 layer non-fuse portion and the patterned second metal layer
 lower width non-fuse portion.

Claim 61 (currently amended) The ~~method~~ structure of claim 60, wherein the intermetal dielectric layer is comprised of a material selected from the group consisting of: USG, PSG, BPSG, FSG and SiN; the second metal layer is comprised of a material selected from the group consisting of: TiN; Ti, TaN and Ta; and the upper and lower first metal layers are comprised of a material selected from the group consisting of: Al; an aluminum copper alloy; copper and a copper alloy.

Claim 62 (currently amended) The ~~method~~ structure of claim 60, wherein the intermetal dielectric layer is comprised of USG; the second metal layer is comprised of TiN; and the upper and lower first metal layers are comprised of Al.

Claim 63 (currently amended) The ~~method~~ structure of claim 60, wherein the intermetal dielectric layer has a thickness of from about 3000 to 15,000Å; the second metal layer has a thickness of from about 200 to 2000Å; the upper first metal layer have a thickness of greater than about 3000Å; and the lower first metal layer has a thickness of from about 2000 to 10,000Å.

Claim 64 (currently amended) The ~~method~~ structure of claim 60, wherein the second metal layer has a thickness of about 1000Å; the upper first metal layer have a thickness of greater than about 8000Å; and the lower first metal layer has a thickness of about 5000Å.

Claim 65 (currently amended) The ~~method~~ structure of claim 60, wherein the top-metal fuse structure further includes a third metal layer fuse portion interposed between the patterned lower first metal layer fuse portion and the patterned second metal layer fuse portion.

Claim 66 (currently amended) The ~~method~~ structure of claim 60, wherein the top-metal fuse structure further includes a third metal layer fuse portion interposed between the patterned lower first metal layer fuse portion and the patterned second metal layer fuse portion; the third metal layer fuse portion being comprised of a material selected from the group consisting of Ti, TiN, Ta and TaN.

Claim 67 (currently amended) The ~~method~~ structure of claim 60, wherein the top-metal fuse structure further includes a third metal layer fuse portion interposed between the patterned lower first metal layer fuse portion and the patterned second metal layer fuse portion; the third metal layer fuse portion being comprised of Ti.

Claim 68 (currently amended) The ~~method~~ structure of claim 60, wherein the top-metal fuse structure further includes a third metal layer fuse portion interposed between the patterned lower first metal layer fuse portion and the patterned second metal layer fuse portion; the third metal layer fuse portion has a thickness of from about 30 to 300Å.

Claim 69 (currently amended) The ~~method~~ structure of claim 60, wherein the top-metal fuse structure further includes a third metal layer fuse portion interposed between the patterned lower first metal layer fuse portion and the patterned second metal layer fuse portion; the third metal layer fuse portion has a thickness of about 100Å.

Claim 70 (currently amended) The ~~method~~ structure of claim 60, wherein the RDL/bump/bonding pad structure is an RDL.

Claim 71 (currently amended) The ~~method~~ structure of claim 60, wherein the RDL/bump/bonding pad structure is a bump.

Claim 72 (currently amended) The ~~method~~ structure of claim 60, wherein the RDL/bump/bonding pad structure is a bonding pad.

Claim 73 (currently amended) The ~~method~~ structure of claim 60, wherein the substrate is a silicon substrate.

Claim 74 (currently amended) The ~~method~~ structure of claim 60, wherein the structure further includes a barrier layer overlying the intermetal dielectric layer.

Claim 75 (currently amended) The ~~method~~ structure of claim 60, wherein the structure further includes a barrier layer overlying the intermetal dielectric layer; the barrier layer having a thickness of from about 100 to 800Å.

Claim 76 (currently amended) The ~~method~~ structure of claim 60, wherein the structure further includes a barrier layer overlying the intermetal dielectric layer; the barrier layer being comprised of Ti/TiN or Ta/TaN.

Docket: TSMC 01 - 1380B
S/N: TBD